

2 --41. The apparatus of claim 40 wherein the impeller comprises at least 3 blades.--

3 --42. The apparatus of claim 41 wherein the impeller has 4 blades.--

4 --43. The apparatus of claim 40 wherein a plurality of magnets is disposed within each blade.--

5 --44. The apparatus of claim 40 wherein a single magnet is disposed within each blade.--

6 --45. The apparatus of claim 40 wherein the blades are separated by channels extending from a first face to an opposing second face of the impeller.--

7 --46. The apparatus of claim 45 wherein the second face of the impeller includes a plurality of tapered surfaces forming the hydrodynamic bearing surface.--

8 --47. The apparatus of claim 40 wherein the apparatus further comprises:
a shaft coupled to a center of a face of the impeller, the shaft axially aligned with the impeller axis of rotation.--

9 --48. A blood pump apparatus comprising:

an impeller having a hydrodynamic bearing surface and a plurality of channels extending substantially radially from a center to a periphery of the impeller; and a plurality of magnets, each magnet disposed within the impeller between a pair of channels, wherein an axis of magnetization of the magnets is substantially parallel to an impeller axis of rotation.--

10 --49. The apparatus of claim 48 wherein the impeller comprises at least 3 channels.--

11 --50. The apparatus of claim 48 wherein the impeller comprises 4 channels.--

12 --51. The apparatus of claim 48 wherein the channels extend from a first face to an opposing second face of the impeller.--

13 --52. The apparatus of claim 51 wherein the second face of the impeller includes a plurality of tapered surfaces forming the hydrodynamic bearing surface.--

14 --53. The apparatus of claim 48 wherein a plurality of magnets is disposed within each blade.--

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15 --54. The apparatus of claim 48 wherein a single magnet is disposed within each blade.--

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16 --55. The apparatus of claim 48 wherein the apparatus further comprises: a shaft coupled to a center of a face of the impeller, the shaft axially aligned with the impeller axis of rotation.--

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17 --56. A blood pump apparatus, comprising:
an impeller having a hydrodynamic bearing surface; and
a first stator and a second stator, wherein the impeller is disposed axially between the first and second stators, wherein the impeller and stators form an axial flux gap motor.--

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18 --57. The apparatus of claim 56 wherein the impeller further comprises a plurality of magnets, each magnet having a magnetic axis substantially parallel to an impeller axis of rotation.--

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19 --58. The apparatus of claim 57 wherein the magnets are disposed within blades of the impeller.--

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20 -59. The apparatus of claim 57 wherein the impeller comprises a plurality of channels extending from a center to a periphery of the impeller.--

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23 -60. The apparatus of claim 59 having at least 3 channels.--

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24 -61. The apparatus of claim 59 having 4 channels.--

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21 -62. The apparatus of claim 58 wherein a plurality of magnets is disposed within each blade.--

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22 -63. The apparatus of claim 58 wherein a single magnet is disposed within each blade.--

25 -64. A blood pump apparatus, comprising:

a housing defining a volute, and

an impeller, the impeller having a hydrodynamic bearing to provide axial support, the impeller having a magnetic bearing to provide radial support.--

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26 -65. The apparatus of claim 64 wherein the impeller further comprises a plurality of magnets, each magnet having a magnetic axis substantially parallel to an impeller axis of rotation.--

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27 --⁶⁶. The apparatus of claim 65 wherein the magnets are disposed within blades of the impeller.--

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28 --⁶⁷. The apparatus of claim 65 wherein the impeller comprises a plurality of channels extending from a center to a periphery of the impeller.--

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31 --⁶⁸. The apparatus of claim 67 having at least 3 channels.--

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32 --⁶⁹. The apparatus of claim 67 having 4 channels.--

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29 --⁷⁰ The apparatus of claim 66 wherein a plurality of magnets is disposed within each blade.--

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30 --⁷¹. The apparatus of claim 66 wherein a single magnet is disposed within each blade.--

REMARKS

Claim 1 has been cancelled and claims 40-71 are presented. Applicant encloses a *Patent Application Fee Determination Record* (form PTO/SB/06) and a check for \$147. The Commissioner is hereby authorized to credit any overpayment or charge any fee for additional claims to deposit account no. 07-1141.

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Examination on the merits of this application is respectfully requested.

Respectfully submitted,



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